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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,349	11/14/2003	Jack M. Zoken	WGS-101	2396

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EXAMINER	
BLOOM, NATHAN J	
ART UNIT	PAPER NUMBER
2609	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/715,349	ZOKEN ET AL.	
	Examiner	Art Unit	
	Nathan Bloom	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8-9, 11-14, and 17-23* is/are rejected.

7)☐ Claim(s) *7,10,15,16,24 and 25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11/14/2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/14/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-6 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson in view of Griffin (US 5265173).

Instant claim 1 encompasses a method of geocoding comprised of the following steps: identifying from orthorectified imagery locations of entities associated with each side of a street segment, numbering the identified locations with respect to positions along each side of the street

segment, and determining the street addressees associated with each side of the street segment and associated the identified locations with the determined street addresses to produce geocoded street addresses for each side of the segment.

Anderson discloses in paragraph 0011-0024 using a parcel map (0012) to identify entities (parcel polygons), calculates a centroid for each, and then calculates the longitude and latitude coordinates (0013) for each centroid. Each centroid is then assigned an Assessor Parcel Number (APN) or Parcel Identifier Number (PIN) (0014-0015) based on its latitude and longitude and these numbers in turn correspond to data in a text list (property tax related database). This text list includes at least one point feature such as the street address (0015). The street address information is known to exist in ranges in these databases and it is known that one side of the street is odd and one side is even numbered. The odd/even siding, range, and direction that the range counts up/down is provided in these street map databases.

However, Anderson does not disclose using an orthorectified satellite or aerial image to identify the locations of the entities. If one were to identify a building within this parcel plot then it would have been obvious to one of ordinary skill in the art to assign the address to the building within the parcel plot so as to provide an actual building with the address as is normally done. Griffin discloses a method of identifying buildings from an aerial or satellite image (it is common to use the corrected or orthorectified image since it is clearer) in Figs 1-3,column 2 lines 19+, and column 3 lines 1-7. Furthermore, aerial photographs when taken are given an orientation and location (typically longitude and latitude). Upon identification of a building they are given coordinates with respect to local x,y coordinates which can then be calculated to give the global longitude and latitude coordinates. Given that in Anderson it is possible to calculate

the centroids for the polygonal parcels then it would also be possible to calculate the centroids of these polygonal buildings within the parcel and then from there calculate the latitude and longitude for each of the centroids. These coordinates can then be mapped to a given parcel polygon map or the parcel map can be overlaid onto the aerial photograph using techniques known to one of ordinary skill in the art. The address for the given parcel can then be associated with the point representing the given building. Seeing that Anderson and Griffin both desire to map buildings/entities then it would have been obvious to one of ordinary skill in the art to combine the teachings of Anderson and Griffin so as to identify an entity such as a building from an aerial image for the purpose of assigning a longitude and latitude coordinate to the street address of the corresponding buildings or entities. Furthermore the given latitude/longitude for the given structure can be mapped to a street map database to retrieve address information.

Instant claim 2 further limits the method of claim 1 wherein the determining of street addresses comprises consulting a Street Map database to obtain a range of possible addresses for the street segment, and consulting a Situs Address database to obtain the street addresses. Consulting a Street Map database for the range of possible addresses has been disclosed in prior art and is admitted as such in both the current application and in the "Background of Invention" by Anderson. Consulting such a database would have been obvious to one of ordinary skill in the art to provide a layer of redundancy since it is clear that points (centroids) along a street segment correspond to addresses along that street segment. Furthermore, the Situs Address database is a legal property location database and given Anderson's use of a legal information database (property tax database) it would have been obvious to one of ordinary skill in the art

that any such database with the appropriate information could be used to associate the address information with the entity.

Instant claim 3 further limits the method of claim 2 wherein the range of addresses is a range of even and a range of odd addresses, and instant claim 4 is encompassed by the limitations of instant claim 3. The existence of the address ranges in even and odd sets from street address databases (GIS street centerline files) for use in geographic street address mapping is admitted by Anderson in paragraph 0006 and by applicant in lines 10-17 of page 3 as being known to one of ordinary skill in the art. Therefore it would have been obvious to one of ordinary skill in the art to use a street map database where the range of addresses is in even and odd sets.

Instant claim 5 further limits the method of claim 1 wherein the identifying of entities comprises selecting centroids associated with the entity and associating these with the street segment. Furthermore, instant claim 6 further limits claim 5 wherein selecting the centroids comprises extracting the entity image features and calculating centroids from the extracted image features. As per rejection of instant claim 1 Anderson has disclosed these limitations in paragraphs 0011-0024 and further detail is disclosed in paragraphs 0043 and 0046.

Instant claim 8 further limits the method of claim 1 wherein the geocoded street address is stored in a database if there is a one to one matching between the addresses and the identified locations. Since Anderson's invention uses an established parcel polygon map then it is known that these entities exists and thus there will be a corresponding address for each parcel (entity). Therefore there is always a one to one matching thus the information is always stored in the database.

Instant claim 9 further limits the method of claim 1 wherein associating the identified locations with addresses comprises consulting an entity registry database identifying multi-unit buildings in the street segment and associating multiple street addresses with identified locations corresponding to the multi-unit buildings. The property tax databases store the street address of the parcel polygon hence it is inherent that if the property were to contain multiple addresses that all these addresses would be associated in the property tax database for the purpose of proper taxing procedure. Given that this information is available then it would have been obvious to one of ordinary skill in the art that all appropriate addresses associated with the parcel would also be associated with the entity on the parcel.

3. Claims 11-12, 17-21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ge (US 6934634) in further view of Anderson.

Instant claim 11 encompasses the method of geocoding wherein a linearly ordered set of entity geocodes is obtained for each side of the street segment and are then associated with addresses by linearly ordered matching. Furthermore, instant claim 12 further limits instant claim 11 wherein obtaining the linearly ordered set of entity geocodes comprises obtaining the set of geocodes for the addressable entity and then linearly ordering the received geocodes. Furthermore, instant claim 17 further limits claim 11 wherein obtaining the linearly ordered set of entity geocodes comprise receiving street segment data for endpoints of the street segment. Instant claim 18 further limits the method of claim 11 wherein obtaining the linearly ordered set of entity addresses comprise receiving a list of assignable addresses associated with the street. Instant claim 19 further limits the method of claim 18 wherein obtaining the linearly ordered set

of entity addresses comprises associating the list with the street segment by receiving address range direction data and street segment side data. Instant claim 20 further limits the method of claim 18 wherein associating the entity geocodes with the entity addresses is performed in accordance with the address range direction data and street segment data.

The method of linear interpolation for obtaining geocodes has been well known and is described in a patent by Ge. In particular claims 1-4 of Ge interpolate addresses along a given road given a starting and ending address, and claim 5 of Ge uses the same method to interpolate the geocodes for the street segment. There are two sets of obtained data that have been stored in columns in a table or list and it is not stated that they are kept in linear order but it is an inherent property necessary for the matching of the two columns of data. This is because retaining the appropriate order as calculated allows these two data sets to be aligned such that a row of the data set contains the address and geocoded information. Furthermore, it has been established by Anderson that property tax databases can be used to retrieve address information for addressable entities and by both Anderson and the applicant that street map databases exist that contain the address range information such that it is given in odd and even sets each corresponding to a side of the street segment. Therefore it would have been obvious to one of ordinary skill in the art to combine these so that the interpolation could be performed using the more accurate data sets stored in the property tax or street map databases. Given a set of addressable entities from the property tax information it would have been possible to interpolate the geocoded information for just those addressable entities identified by the street map or property tax database. Furthermore, given that it is known to one of ordinary skill in the art that each side of a road pertains to an even or odd set of addresses and that this information is available in street map databases then it

would have been obvious to one of ordinary skill in the art to use these databases to provide more accurate data for the interpolation of the locations on the street segment in question. Furthermore, as it pertains to instant claims 17-19 it is understood by one of ordinary skill in the art that retrieving address or geocoded information about the endpoints of a given street segment is necessary to perform the interpolation and that address range and street side data has been provided in street map databases used for geocoding. Pertaining to instant claim 20 interpolation is performed from a beginning point to an ending point and given that this information is provided by the street map database then it would be obvious to interpolate the data in the direction of the data range for ease of data collection and organization.

Instant claim 21 further limits the method of claim 11 wherein associating the geocodes with addresses comprises producing a one to one correspondence between them. The method of interpolation only interpolates one point for every address or addressable entity depending on the database being used and thus there is only a single corresponding address per geocode in the table.

Instant claim 23 encompasses the method of claim 11 wherein associating the entity geocodes with the entity addresses comprises redefining the street segment. The street segment is defined by its own position on the map as well as the range, direction, and sides that the even and odd addresses occurs. This information is included in databases that are used to obtain the information. Since new homes, buildings, and streets are built these databases are constantly updated to contain this new or slightly altered information. In order to keep an accurate record, when this new information is received the street segment must be redefined to comply with this new information. It would have been bee obvious to one of ordinary skill in the art to redefine

these street segments based on new information within the databases to increase the accuracy of the street segment by keeping its information updated.

4. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ge (US 6934634) in further view of Anderson and Griffin.

Instant claim 13 further limits the method of claim 12 wherein obtaining the set of entity geocodes associated with the side of the street segment comprises identifying image features of an aerial or satellite image and correlating the image features with street segment data from a street map data source. Furthermore, instant claim 14 further limits the method of claim 13 wherein the identifying comprises identifying street segments and potentially addressable entities. As has been discusses in the rejections of instant claims 1-6 and 8-9 Anderson in combination with Griffin has disclosed the identifying and geocoding of addressable entities for a geographic region (street segment) and therefore the method is known for obtaining a set of geocodes and addresses for the entities along a street segment. This information is then stored in a database associated with said geographic region (street segment). Thus the means for identifying and creating a list in association with the street segment based on image features of an aerial photograph has been known and it would have been obvious to one of ordinary skill in the art to use this method to obtain address or geocode information for a given geographic region (street segment).

5. Claims 11 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ge (US 6934634) in further view of Anderson and Kubica (US 2002/0035432).

Instant claim 22 further limits the method of claim 11 wherein the associating entity geocodes with the entity addresses comprises accessing an entity registry database comprising multiunit buildings and multi-building entities. Ge as discussed in the rejection of claim 11-12 and 17-21 discloses the use of interpolation for obtaining a matched list of addresses and geocodes. Anderson and applicant further disclose that the use of interpolation has been known to one of ordinary skill in the art and that the use of special databases to provide address information for entities along a street segment. Kubica discloses a method for spatially indexing land and in particular paragraph 0093 covers the situation where a given cell or entity has multiple address then it is divided into sub-cells according to these multiple addresses. Hence, it has been recognized that this is a problem and that attaching multiple addresses to a single main cell or entity is the solution. Therefore the information exists as to a given cell or entity having multiple addresses and that these multiple addresses are associated with each other as being in the same location within in this master cell which is stored in a table, list, or database by Kubica. Thus there exists a database that correlates a list of addresses with a single location. Since it has been recognized by Anderson, applicant, and Ge that databases with information regarding street address need to be used to perform geocoding then it would have been obvious to one of ordinary skill in the art to use a database with information regarding to multiple addresses at a single location since this would affect the interpolation of the address range over the street segment. By using this information a more accurate geocoding of the addresses can be performed.

Allowable Subject Matter

6. Claims 7,10, 15-16, and 23-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Instant claim 7 differentiates from the prior art used and searched in that it uses the ordinal numbering of the entity features found in the photograph to associate them with natural order of the determined street addresses. Anderson associates the addresses by using the APN/PIN assigned to a parcel polygon to obtain the associated street address from the property tax database based on this value.

Instant claim 10 differentiates from the prior art in that it performs an error correction step that identifies when there is not a one to one matching between the geocodes and addresses and then redefines this street segment to include multiple adjacent segments.

Instant claims 15-16 differentiate from the prior art in that they linearly order the entity geocodes by distance. This distance is determined by calculating using perpendicular and intersecting lines the distance along the street segment that each address occurs.

Instant claims 24-25 differentiates from the prior art in that it redefines the street segment by transferring address to an adjacent street segment or switching the addresses between left and right sides of the segment based on the entity geocodes or the geocodes and the entity addresses. This step is for error correction when data is determined to be incorrect and thus changes are made to locations along the street segment.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Bloom whose telephone number is 571-272-9321. The examiner can normally be reached on Monday through Thursday from 7:30 am to 5:00 pm (EST). The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Stucker, can be reached on 571-272-0911. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nathan Bloom 2/2/06

JEFFREY STUCKER
SUPERVISORY PATENT EXAMINER